

## MEMORANDUM

**DATE:** July 23, 2012

**TO:** Ms. Rose Longoria, Yakama Nation Fisheries Program

**FROM:** Colin Wagoner and Bob Dexter

**SUBJECT:** Draft Engineering Evaluation / Cost Analysis GASCO Sediment Cleanup Site (May 2012)

This memorandum provides comments on the Draft EE/CA prepared by Anchor for the GASCO sediment site. Sean Sheldrake of EPA has asked that comments be provided to him on July 16, 2012.

### Summary of the EE/CA

The EE/CA includes approximately 2355 pages including the main body, figures and tables and 10 appendices. The text is integrated with the Portland Harbor Feasibility Study (FS) and makes numerous references back to the analysis included in that document. The EE/CA includes 5 alternatives ranging from Alternative 1, No Action, to Alternative 5 which includes dredging of contaminated sediments up to a depth of 20 feet. As in the PH FS, all of the alternatives heavily rely on Monitored Natural Recovery (MNR) and the analyses presented in the EE/CA suggest that all of the alternatives, including no action, will achieve overall protection of human health and the environment and will meet ARARs. The EE/CA also relies on upland source efforts at GASCO and ongoing activities at Siltronic as managed by Oregon DEQ.

### General Comments

The EE/CA displays a bias toward low cost, limited action in several senses. First, the short-term and long-term effectiveness of MNR seems over-emphasized and the risk associated with releases should MNR not be as effective as predicted are not explicit. Second, the use of containment systems to reduce releases during dredging are under-valued, particularly sheet pile walls. Third, the effectiveness of groundwater containment to induce river flow into the sediment at significant distances from the shore seems overly optimistic. Fourth, the risk associated with dense non-aqueous phase liquids (DNAPLs) in the subsurface is minimized and there is no acknowledgement that this material is considered problematic under DEQs definition of hot spots.

The bias toward limited action alternatives is exemplified by the detailed and comparative analyses. In my opinion, it is not credible to state that the no action alternative for one of the most highly contaminated sediment sites in Portland Harbor meets the threshold criteria of overall protection of health and the environment and will achieve ARARs. The extent of this bias calls into question the effectiveness evaluations for all of the alternatives.



It seems to me that the alternative selected should include removal of NAPL and removal or capping of sediment with less mobile substantial product. It is not clear to me whether the dock needs to be removed to access material in that area but I have not had time to review data from under the dock, assuming there is any.

### Specific Comments

Page	Section	Comment
16	2.3.1.1 and Figure 23.1.1-1	The text and figure describe and show a light green hatched area where “the groundwater gradient is reversed, thereby preventing seepage of groundwater into the Willamette River.” This area extends approximately 750 feet into the river. It is implausible that flow reversal to this distance can be achieved. A discussion with Dana Bayuk, DEQ’s site manager for the upland source control project, indicated that a preliminary model has been developed but the full-scale system will be going through a shake-down period through the end of 2012, which will be used to calibrate and verify the groundwater (MODFLOW) model. In the meantime, he doesn’t think that ANCHOR has supported the contention that there will be such a large capture zone for the extraction system.
25	2.5.1.2	Is it clear that PCBs were not used at GASCO or Siltronic? While these PCBs may not be primary COCs for these sites, they were very commonly used industrial chemicals.
27	2.5.2, last paragraph	The sediment trap data indicate that sediment moving downstream from the GASCO site is more than an order of magnitude higher in BaP than sediment coming into the site (300-1,000 µg/kg out versus 20-50 µg/kg in). This indicates that sediment at GASCO is an ongoing source to the river and requires action. It does not support MNR as suggested later in the report. It is also inconsistent with the contention that GASCO is primarily a depositional area as suggested by the Lines of evidence in Figure 5.1.1.2-1 panels 2 and 6.
28-29	2.5.3 and Figure 2.5.3-1 and tables 4.4.1.-1 and 4.4.1-2	The text begins the discussion of substantial product by differentiating between solid phase (pencil pitch and lampblack) and liquid phase (DNAPL). The solid phase material is further segregated between material above 13 feet NAVD88, which is considered upland and outside of the scope of the EE/CC, and material below that considered under the purview of the EE/CA. The data used to prepare figure 2.3.3-1 is presented on tables 4.4.1.-1 and 4.4.1-2, whose titles seem to be switched.
48	3.2, end of first paragraph	Breast-feeding infants was not used to develop remediation goals (RG) in the EE/CA per an agreement with EPA. Is this still appropriate in light of the approach taken in the PH risk assessment?
58	RAO 2	This section describes calculating surface area weighted average concentrations (SWACs) for shoreline ½ River Miles (RM). It would be preferable to average over the GASCO area of interest to reduce inclusion of areas that are not associated with the site. GASCO is located approximately between RM 6.1 and RM 6.4



83	4.3.1 Hot spot discussion	It does not seem like they are meeting the intent of DEQ's hot spot guidance. It is mentioned, but not addressed the way that DEQ requires (per Anchors quote: "It is generally assumed that NAPLs will produce highly contaminated, highly mobile, and not reliably containable hot spots.") Anchor seems to be saying that each alternative addresses hot sports because they have been <b>identified</b> . If I am reading that correctly, that is a pretty low bar for addressing the hot spot guidance.
85	4.3.2 Principal Threat materials	The statements in the first full paragraph don't seem to be logical. They believe that capping can contain mobile materials, which according to them means it isn't mobile.
148-150	6.1 and figure 6.1-1 through 6.1.5	The remedial alternatives include a spatially complicated mix of MNR, EMNR, capping, and removal as modified by factors such as docks, future dredging areas, etc. The patterns are so complex that it would be infeasible to construct the alternatives as conceived. The GASCO site is small enough that a more plausible footprint could have been developed for each alternative.
183	7.2.2.2	The last paragraph states: " <i>The upland groundwater extraction system will result in a reversed groundwater gradient in the alluvial sediments that will cause COCs in river sediments to move toward upland extraction system where groundwater is captured and treated over time.</i> " This is a working hypothesis that has not been proven. In this reviewer's opinion, it is unlikely that an upland system can influence groundwater over such a large area. If the model indicates that it can, the model is probably poorly conceptualized, i.e. the layering or material properties are unrealistic.
188	7.2.2.3.3	No active remedy is proposed for the riverbank soil but it seems that most of that soil has not been sampled because of the presence of riprap, which armors against erosion. Is there enough data to say that there is no product emanating from the riverbank?
192	7.2.3.2	The last sentence refers to "following actions..." but no actions are described. It seems there is some text missing.
193-194	7.2.4.1.3	There are more references to the groundwater extraction system as a means of minimizing groundwater impacts. These claims are not supported by existing data or analyses.
195	7.2.4.2.1	The last two sentences, beginning with: "During such an extreme flood event..." describe erosion, downstream transport, and a return to pre-flood equilibrium. Essentially, some of the contamination is getting washed downstream and is replaced by other sediment from upstream areas that has lower concentrations of GASCO COCs. This is not a well-controlled remedy and should not be considered as an effective application of MNR.



203	7.2.6.2.3	This section describes the releases anticipated during dredging and estimates that 2-4 percent of the contaminants will be released during dredging. However, all of the case histories are for silt curtains and the text suggests that the release rate is anticipated to be similar for sheet pile containment. It does not seem plausible that the release rate from a sheet pile, which admittedly is non-zero, is well-predicted by a silt curtain.
207	7.3.1	We disagree that the No Action alternative meets the Overall Protection criterion. The sediment trap data indicate that the area is an ongoing source of PAHs to downstream areas. The presence of NAPL is an unacceptable long-term risk. The groundwater extraction system is unlikely to control migration of PAHs into the river.
208	7.3.2	We don't believe that the No Action alternative complies with Oregon's hot spot policy, so this alternative does not comply with ARARs.
209	7.3.3-7.3.7	Alternative 1, No Action, should be dropped from the analysis because it does not meet the threshold criteria.
210	7.4.1	Alternative 2a seems unlikely to meet the Overall protection of human health and environment criterion because the presence of NAPL is an unacceptable long-term risk and the groundwater extraction system is unlikely to control migration of groundwater and thus COCs into the river.
212	7.4.2	Alternative 2a seems unlikely to comply with Oregon's hot spot policy, so this alternative does not comply with ARARs.